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Date: 5/4/04 8:01AM
Subject: East Fork Box Canyon Monitoring Data April 29, 2004

The East Fork of Box Canyon was monitored on 04/29/04 for both flow and subsidence cracks. (See attached excel spread sheet, map of area, and pictures sent in other emails)

Observed a new fracture zone in the stream channel located approximately 100 feet above EFB-10. The fractures occur in thin-bedded silty sandstone in the channel bottom. All of the stream flow infiltrated into the fracture system at that point. The stream channel was dry for approximately 150-200 feet. At that point the water reemerged into the stream channel. Because this reach of the stream was buried under snow during previous monitoring events, the fractures and stream infiltration could possibly be an old occurrence that happened back in late December or early January and went unobserved.

There were five segments of the stream channel between EFB-9 and EFB-11A where there was little or no flow in the channel. A flow of 21.2 gpm was measured in the East Fork below the subsided area. This flow is the same as the maximum flow measured upstream in the East Fork of 21.4 gpm at EFB-11. Thus it is apparent that streamflow in the subsided portion of the East Fork is not being routed into the mine or diverted out of the East Fork drainage.

The map will need to be updated later to include the new stream segment where flow infiltrates into the fracture area between EFB-10 and EFB-14 since our draftsman is off this week.

Mike

<<East Fork Sites.xls>> <<Field notes 29Apr04.doc>> <<FIGURE 7-8 WEEKLEY.pdf>>

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PETERSEN HYDROLOGIC

East Fork Box Canyon

Field Notes: 29 Apr 2004

Erik Petersen, Chris Hansen, Mike Davis, Steve Fluke (DOGM), Tom Lloyd (USFS)

Cold cloudy day, temperatures near freezing

1 inch of new snow in the canyon fell in last 24 hours

Snow melting during the day

EFB-14

No flow visible at surface, saturated soil in discharge area.

Spring discharge area partially snow covered, ground mostly frozen

EFB-13 South

No flow visible at surface, sediments in discharge area saturated

Spring discharge area partially snow covered, ground mostly frozen

EFB-13 North

No flow visible at surface, sediments in discharge area saturated

Spring discharge area partially snow covered, ground mostly frozen

EFB-12 South

No flow visible at surface, sediments in discharge area saturated

Spring discharge area partially snow covered, ground mostly frozen

EFB-12 North

No flow visible at surface, sediments in discharge area saturated

Spring discharge area partially snow covered, ground mostly frozen

EFB-11A

$Q = 3 \text{ gallons in } 17.9 = 10.1 \text{ gpm}$

East Fork below EFB-11A (below tension cracks)

$Q = 3 \text{ gallons in } 8.5 \text{ seconds} = 21.2 \text{ gpm}$



PETERSEN HYDROLOGIC

EFB-11

Spring Pines 214

$Q = \frac{1}{2}$ gallon in 22.8 seconds = 1.32 gpm

The flow at Pines 214 was measured just above the confluence of the spring discharge with the East Fork stream channel (see photo). Spring flow originating near the shelter area appears to flow into the shallow subsurface through subsidence fractures and subsequently re-emerges at the contact with an underlying shale layer just above the confluence with the East Fork channel.

EFB-11 (below Pines 214)

$Q = 3$ gallons in 8.4 seconds = 21.4 gpm

EFB-10

$Q = 3$ gallons in 9.8 seconds = 18.4 gpm

EFB-9

$Q = 2$ gallons in 7.4 seconds + $\frac{1}{2}$ gpm leakage = 16.7 gpm

EFB-8

Spring

$Q = \frac{1}{2}$ gallon in 46.5 sec = 0.65 gpm

The spring discharge area was still largely covered with a mound of ice

EFB-8 (above spring)

$Q = 17$ pints in 9.5 seconds + 1 gpm leakage = 14.7 gpm

$Q = 0.65 + 14.7 = 15.4$ gpm total



PETERSEN HYDROLOGIC

EFB-7

$Q = 3 \text{ gallons in } 11.3 \text{ seconds} = 15.9 \text{ gpm}$

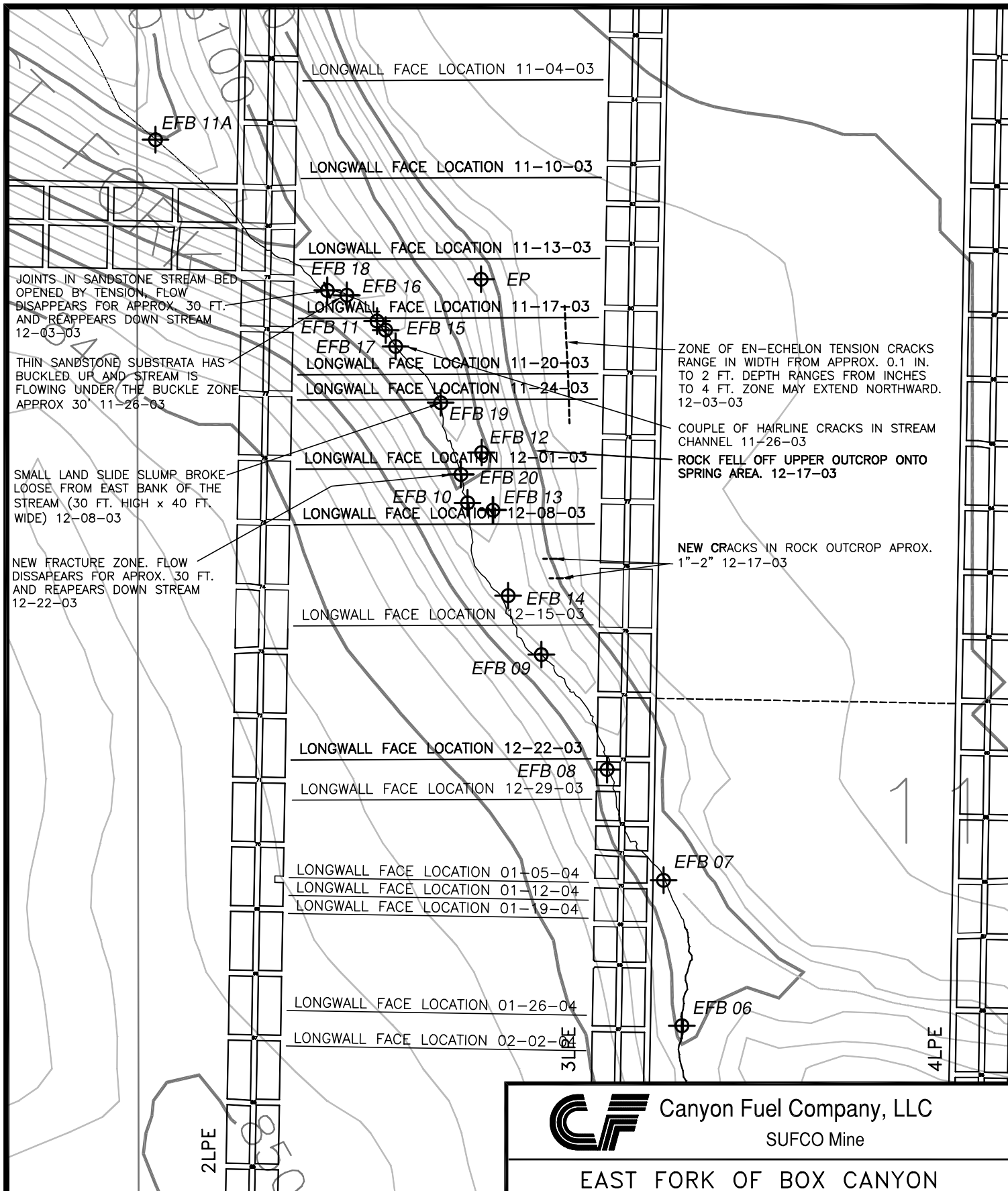
EFB-6

$Q = \frac{1}{2} \text{ gallon in } 9.7 \text{ seconds} = 3.1 \text{ gpm}$

Notes:

There were some short segments of the stream channel (a few tens of feet in length) between EFB-9 and EFB-11A where there was little or no flow in the channel. It appears that some or all of the flow in these reaches is moving through the very shallow subsurface through subsidence fractures and/or open horizontal bedding planes. Flow re-emerges in the channel where unfractured, low-permeability horizons underlie the fractured rock horizons.

A flow of 21.2 gpm was measured in the East Fork below the subsided area. This flow is the same as the maximum flow measured upstream in the East Fork (21.4 gpm at EFB-11). Thus it is apparent that streamflow in the subsided portion of the East Fork is not being routed into the mine or diverted out of the East Fork drainage.



LEGEND

- APPROXIMATE CRACK LOCATION
- SURVEYED CRACK LOCATION
- EFB MONITORING LOCATION



Canyon Fuel Company, LLC
SUFCO Mine

EAST FORK OF BOX CANYON WEEKLY MONITORING

DATE: APRIL 19, 2004	SCALE: 1" = 400'
397 SOUTH 800 WEST SALINA, UTAH 84654	DRAWN BY: BDH
FILENAME: H:\DWG\MRP\PLATES\FIGURE 7-8	











